

WHAT IS CLAIMED IS:

1 1. An audible alarm relay system comprising:
2 a microphone for converting environmental sounds to electrical sound signals;
3 processing circuitry for receiving the electrical sound signals, and analyzing the sound
4 signals to determine if the sound signals contain a sound pattern that matches a stored sound
5 pattern; and
6 an output device for notifying a user that the digital sound signal contains a sound pattern
7 that matches a stored sound pattern.

1 2. The audible alarm relay system of Claim 1, wherein the processing circuitry
2 comprises:
3 a processor for controlling the system;
4 a time sampler for sampling the sound signals;
5 a memory for storing the stored sound patterns;
6 a band pass filter for determining if the sampled sound signals contain at least one
7 frequency that matches a stored frequency; and
8 a rate detector for determining if the sampled sound signals contain at least one rate that
9 matches a stored rate.

1 3. The audible alarm relay system of Claim 2, wherein the output device notifies the
2 user if the processing circuitry determines that the sampled sound signal contains both a
3 frequency and a rate that matches a stored sound pattern.

1 4. The audible alarm relay system of Claim 3, wherein the output device is one of an
2 audio, visual and tactile device.

1 5. The audible alarm relay system of Claim 1, wherein the audible alarm is any
2 predetermined sound.

1 6. The audible alarm relay system of Claim 1, further comprising noise cancellation
2 means for monitoring the ambient noise and canceling the ambient noise from the environmental
3 sounds.

1 7. The audible alarm relay system of Claim 1, wherein the processing circuitry
2 comprises:
3 a processor for controlling the system;
4 a time sampler for sampling the sound signals;
5 a correlator for correlating the sound signal with the stored sound pattern; and
6 an analog memory for storing the stored sound patterns.

1 8. The audible alarm relay system of Claim 7, wherein the time sampler performs
2 the time sampling in one of the analog domain and digital domain.

1 9. The audible alarm relay system of Claim 7, wherein the correlator performs the
2 correlation in one of the analog domain and digital domain.

1 10. The audible alarm system of Claim 1, wherein the system is an after-market add-
2 on device for detecting pre-existing sound signals.

1 11. The audible alarm system of Claim 1, further comprising:
2 a transmitting unit, having the microphone and processing circuitry, for transmitting a
3 wireless alarm command signal if a matching sound pattern is found; and
4 a receiving unit having second processing circuitry and the output device for receiving
5 the alarm command signal and notifying the user that the alarm command signal has been
6 received.

1 12. A method for relaying an audible alarm, comprising the steps of:
2 storing a sound pattern of at least one audible alarm in a memory;
3 monitoring the environment through a microphone;
4 determining if a sound is detected in the environment;

5 analyzing the detected sound if a sound is detected;
6 determining if a sound pattern of the detected sound matches a sound pattern stored in the
7 memory; and
8 outputting a secondary alarm if it is determined that a matching sound pattern is stored in
9 the memory.

1 13. The method for relaying an audible alarm of Claim 12, wherein the storing step
2 comprises the steps of:

3 inputting the sound pattern of the at least one audible alarm through the microphone;
4 analyzing the input sound pattern; and
5 storing the sound pattern in memory.

1 14. The method for relaying an audible alarm of Claim 13, wherein the analyzing step
2 determines the frequency and rate of the sound pattern and stores the frequency and rate of the
3 sound pattern in the memory.

1 15. The method for relaying an audible alarm of Claim 12, further comprising the
2 steps of monitoring the ambient noise and canceling the ambient noise from the environmental
3 sounds.

1 16. The method for relaying an audible alarm of Claim 12, wherein the analyzing step
2 comprises the steps of:

3 time sampling the sound signals;
4 correlating the sound signal with the stored sound pattern.

1 17. The method for relaying an audible alarm of Claim 12, wherein the time sampling
2 is performed in one of the analog domain and digital domain.

1 18. The method for relaying an audible alarm of Claim 12, wherein the correlating is
2 performed in one of the analog domain and digital domain.

1 19. The method for relaying an audible alarm of Claim 12, wherein the method is
2 performed in an after-market add-on device for detecting pre-existing sound signals.

1 20. The method for relaying an audible alarm of Claim 12, further comprising the
2 steps of:
3 transmitting from a wireless transmitter a wireless alarm command signal if a matching
4 sound pattern is found; and,
5 receiving at a wireless receiver the alarm command signal and notifying the user that the
6 alarm command signal has been received.

1 21. An audible alarm relay system comprising:
2 a memory for storing the frequency and rate of at least one predetermined sound pattern;
3 a microphone for converting environmental sounds to electrical sound signals;
4 an analog to digital converter for converting the electrical sound signals to digital sound
5 signals;
6 a processor for determining if the digital sound signals contain at least one frequency that
7 matches a stored frequency, and determining if the digital sound signals contain at least one rate
8 that matches a stored rate; and
9 an output device for notifying a user if the processing circuitry determines that the digital
10 sound signal contains both a frequency and a rate that matches the frequency and rate of the at
11 least one predetermined sound pattern.

1 22. The audible alarm relay system of Claim 21, wherein the output device is one of
2 an audio, visual and tactile device.

1 23. The audible alarm relay system of Claim 21, wherein the audible alarm is any
2 predetermined sound.

1 24. The audible alarm relay system of Claim 21, further comprising noise cancellation
2 means for monitoring the ambient noise and canceling the ambient noise from the environmental
3 sounds.

1 25. A method for relaying an audible alarm, comprising the steps of:
2 inputting a sound pattern of at least one audible alarm through a microphone;
3 analyzing the sound pattern of the at least one input audible alarm;
4 storing the sound pattern in memory;
5 monitoring the environment through the microphone;
6 determining if a sound is detected in the environment;
7 analyzing the detected sound if a sound is detected;
8 determining if a sound pattern of the detected sound matches a sound pattern stored in the
9 memory; and
10 outputting a secondary alarm if it is determined that a matching sound pattern is stored in
11 the memory.

1 26. The method for relaying an audible alarm of Claim 25, wherein the analyzing step
2 determines the frequency and rate of the sound pattern and stores the frequency and rate of the
3 sound pattern in the memory.

1 27. The method for relaying an audible alarm of Claim 25, further comprising the
2 steps of monitoring the ambient noise and canceling the ambient noise from the environmental
3 sounds.